



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

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July 16, 2014

Mr. Daily Hill
Vice President & General Manager
IQE KC LLC
200 John Hancock Road
Taunton, MA 02780

RE: Taunton
Transmittal No.: X262056
Application No.: SE-14-018
Class: *Submin*
FMF No.: 336269
**AIR QUALITY PLAN APPROVAL
ADMINISTRATIVE AMMENDMENT**

Dear Mr. Hill:

The Massachusetts Department of Environmental Protection ("MassDEP"), Bureau of Waste Prevention, has received your request to administratively amend your Limited Plan Application ("Application") SE-12-027. This Administrative Amendment reflects a change in ownership at the Facility, and modifies the monitoring requirements of the Metalorganic Vapor Phase Epitaxy (MOVPE) reactor at your semiconductor manufacturing facility located at 200 John Hancock Street in Taunton, Massachusetts ("Facility").

This Application was submitted by the Facility after receiving Notice of Noncompliance NON-SE-14-9008-7, dated March 17, 2014, and in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 "Air Pollution Control," regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-J, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP's review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this Administrative Amendment to **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator ("Permittee") must comply in order for the Facility to be operated in compliance with this Plan Approval.

1. DESCRIPTION OF FACILITY AND APPLICATION

IQE KC LLC is a manufacturer of compound semiconductor crystalline wafers, which are used as transistors in cellular phones and other wireless devices. This application approves the Metalorganic Vapor Phase Epitaxy (MOVPE) reactor. The MOVPE process will generate approximately 7.45 pounds per hour of ammonia (uncontrolled), which will be vented to a direct fire thermal oxidizer. Emissions are based 8,760 hours of operation per year.

The Edwards Spectra G-800 natural gas fired thermal oxidizer will be equipped with an Edwards burner that has a maximum firing rate of 190,800 Btu per hour. The Permittee continuously monitors the concentration of ammonia leaving the oxidizer. The sensors have detection limits of 0 to 200 parts per million by volume (ppmv). For the majority of the time, the exhaust ammonia concentration leaving the oxidizer is below 3.0 ppmv. However, there are short periods of time where spikes may occur. At 100 ppmv, the process tool automatically shuts down.

2. EMISSION UNIT (EU) IDENTIFICATION

Each Emission Unit (EU) identified in Table 1 is subject to and regulated by this Plan Approval:

Table 1			
EU#	Description	Design Capacity	Pollution Control Device (PCD)
1	Metalorganic Vapor Phase Epitaxy reactor	75 SLM of NH ₃	direct fire thermal oxidizer

Table 1 Key:

EU# = Emission Unit Number
SLM = Standard liters per minute

PCD = Pollution Control Device
NH₃ = Ammonia

3. APPLICABLE REQUIREMENTS

A. OPERATIONAL, PRODUCTION and EMISSION LIMITS

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 2, below:

Table 2			
EU#	Operational / Production Limit	Air Contaminant	Emission Limit
1	Capture efficiency = 100% Destruction efficiency=99.7%	Non-criteria pollutant: NH ₃	≤ 100 ppmv ≤ 0.6 lb/hr 0.53 TPM 2.63 TPY
	None	opacity	0%

Table 2 Key:

EU# = Emission Unit Number

TPM = tons per month

ppmv = parts per million volume

NH₃ = Ammonia

TPY = tons per consecutive 12-month period

≤ = Equal to or less than

B. COMPLIANCE DEMONSTRATION

The Permittee is subject to, and shall comply with, the monitoring, testing, record keeping, and reporting requirements as contained in Tables 3, 4, and 5 below:

Table 3	
EU#	Monitoring and Testing Requirements
1	1. The Permittee shall continuously monitor the exhaust concentration of NH ₃ exiting the thermal oxidizer. The Permittee shall maintain the NH ₃ monitoring system as required by the manufacturer. The monitor shall be connected to an audible alarm.
Facility-wide	2. If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13

Table 3 Key:

EU# = Emission Unit Number

NH₃ = Ammonia

Table 4	
EU#	Record Keeping Requirements
1	1. The Permittee shall maintain a record of all faults and alarms associated with the thermal oxidizer.
Facility-wide	2. The Permittee shall maintain adequate records on-site to demonstrate compliance with all operational, production, and emission limits contained in Table 2 above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive twelve month period (current month plus prior eleven months). These records shall be compiled no later than the 15 th day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at http://www.mass.gov/dep/air/approvals/aqforms.htm#report .
	3. The Permittee shall maintain records of monitoring and testing as required by Table 3.
	4. The Permittee shall maintain a copy of this Plan Approval, underlying Application and the most up-to-date SOMP for the EU(s) and PCD(s) approved herein on-site.
	5. The Permittee shall maintain a record of routine maintenance activities performed on the approved EU (MOVPE reactor), the PCD (thermal oxidizer), and the NH ₃ monitoring equipment. The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
	6. The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU (MOVPE reactor), the PCD (thermal oxidizer), and the NH ₃ monitoring equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.
	7. The Permittee shall maintain records required by this Plan Approval on-site for a minimum of five (5) years, except for the electronic records of the concentration of NH ₃ exiting the thermal oxidizer, which shall maintained on-site for a minimum of one (1) year.
	8. The Permittee shall make records required by this Plan Approval available to MassDEP and USEPA personnel upon request.

Table 4 Key:

SOMP = Standard Operating and Maintenance Procedure
 MOVPE = Metalorganic Vapor Phase Epitaxy
 NH₃ = ammonia
 USEPA = United States Environmental Protection Agency

EU = Emission Unit
 PCD = Pollution Control Device
 EU# = Emission Unit Number

Table 5	
EU#	Reporting Requirements
Facility-wide	1. The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a “Responsible Official” as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).
	2. The Permittee shall notify the Southeast Regional Office of MassDEP, BWP Compliance and Enforcement Chief by telephone 508-946-2817, email, sair@state.ma.us or fax 508-947-6557, as soon as possible, but no later than one (1) business day after discovery of an exceedance(s) of Table 2 requirements. A written report shall be submitted to Compliance and Enforcement Chief at MassDEP within three (3) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).
	3. The Permittee shall provide a copy to MassDEP of any record required to be maintained by this Plan Approval within 30-days from MassDEP’s request.
	4. The Permittee shall submit to MassDEP for approval a stack emission pretest protocol, at least 30 days prior to emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.
	5. The Permittee shall submit to MassDEP a final stack emission test results report, within 45 days after emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.

Table 5 Key:

EU# = Emission Unit Number

4. SPECIAL TERMS AND CONDITIONS

The Permittee is subject to, and shall comply with, the following special terms and conditions:

- A. The Permittee shall comply with the Special Terms and Conditions as contained in Table 6 below:

Table 6	
EU#	Special Terms and Conditions
1	1. The Permittee shall interlock the MOVPE reactor and the thermal oxidizer so that the reactor cannot be operated unless the thermal oxidizer is operating, and the exhaust concentration of NH ₃ exiting the thermal oxidizer is equal to or less than 100 parts per million volume.
Facility-wide	2. This Plan Approval, Tr. No. X262056, supersedes the Conditional/ Plan Approval, Tr. No. X251469, issued to the Permittee (formerly named Kopin Corp.) on August 13, 2012, in its entirety, with the exception that all plan application materials submitted as part of the Plan Approval Tr. No. X251469 become part of this Plan Approval, Tr. No. X262056.

Table 6 Key:

EU# = Emission Unit Number

NH₃ = ammonia

- B. The Permittee shall install and use an exhaust stack, as required in Table 7, on each of the Emission Units that is consistent with good air pollution control engineering practice and that discharges so as to not cause or contribute to a condition of air pollution. Each exhaust stack shall be configured to discharge the gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including but not limited to rain protection devices known as “shanty caps” and “egg beaters.” The Permittee shall install and utilize exhaust stacks with the following parameters, as contained in Table 7 below, for the Emission Units that are regulated by this Plan Approval:

Table 7				
EU#	Stack Height Above Ground (feet)	Stack Inside Exit Dimensions (feet)	Stack Gas Exit Velocity Range (feet per second)	Stack Gas Exit Temperature Range (°F)
1	41	3.5	92	80 - 90

Table 7 Key:

EU# = Emission Unit Number

°F = Degree Fahrenheit

5. GENERAL CONDITIONS

The Permittee is subject to, and shall comply with, the following general conditions:

- A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).
- B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.
- C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.

- D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
- E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.
- F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.
- G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.
- H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.
- I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.
- J. The Permittee shall conduct emission testing, if requested by MassDEP, in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13. If required, a pretest protocol report shall be submitted to MassDEP at least 30 days prior to emission testing and the final test results report shall be submitted within 45 days after emission testing.
- K. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

6. MASSACHUSETTS ENVIRONMENTAL POLICY ACT

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain “Fail-Safe Provisions,” which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

7. APPEAL PROCESS

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Enclosed is a stamped approved copy of the application submittal.

Should you have any questions concerning this Plan Approval, please contact the undersigned by telephone at 508-946-2717, or in writing at the letterhead address.

This final document copy is being provided to you electronically by the
Department of Environmental Protection. A signed copy of this document
is on file at the DEP office listed on the letterhead.

Thomas Cushing
Permit Section
Bureau of Waste Prevention

Enclosure

ecc: Taunton Health Dept / Taunton Fire Department
Capaccio Environmental Engineering - L. Sheridan
MassDEP/SERO - M. Pinaud
L. Black
G. Hunt
MassDEP/Boston - Y. Tian